

**Notice of Allowability**

Application No.

09/757,583

Examiner

Khiem D Nguyen

Applicant(s)

MATSUDO ET AL

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 06/30/04.
2. ☒ The allowed claim(s) is/are 1-7, 9-14, 16-21 and 28.
3. ☒ The drawings filed on 11 January 2001 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- \* Certified copies not received: \_\_\_\_\_.
5. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
  - (a) ☐ The translation of the foreign language provisional application has been received.
6. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE**

7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
8. ☐ CORRECTED DRAWINGS must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No. \_\_\_\_\_.
  - (b) ☐ including changes required by the proposed drawing correction filed \_\_\_\_\_, which has been approved by the Examiner.
  - (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet.

9. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |   |
|--|---|
| 1 <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                             | 2 <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)          |
| 3 <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                    | 4 <input type="checkbox"/> Interview Summary (PTO-413), Paper No. _____             |
| 5 <input type="checkbox"/> Information Disclosure Statements (PTO-1449), Paper No. _____               | 6 <input type="checkbox"/> Examiner's Amendment/Comment                             |
| 7 <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 8 <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
|  | 9 <input type="checkbox"/> Other  |

**DETAILED ACTION*****Allowable Subject Matter***

Claims 1-7, 9-14, 16-21, and 28 are allowed.

***Reasons For Allowance***

The following is a statement of reasons for the indication of allowable subject matter: The prior art taken alone or in combination neither discloses nor makes obvious the instant process of claims as a whole. Specifically, the prior art of record, Doshi et al (U.S. Patent 6,277,720) disclose a method for preparing a gate electrode/wiring, which comprises a step of depositing a tungsten silicide layer (3a: 24) on a polysilicon layer (figure 3a: 22); a step of depositing a silicon nitride layer (figure 3a: 26) on the tungsten silicide layer; and a side wall oxidizing step (col. 7, lines 55+) of forming a silicon oxide film (figure 3a, 11) on a side wall of a gate electrode/wiring layer including the polysilicon layer and the tungsten silicide layer but fails to teach or suggest the Applicant's steps of wherein when a tungsten silicide layer is formed on a polysilicon layer, a phosphorous atom containing gas is added to a reactive gas at least in the initial stage that the tungsten silicide layer is formed and the amount of the added phosphorous atom containing gas is set to be in the range from 0.2 vol. % to 0.45 vol. % as recited in the independent claims 1, 2, 10, and 11. Schuegraf et al. (U.S. Pub. 2003/0062566) disclose a method for preparing a gate electrode/wiring, which comprises: a step of depositing a tungsten silicide layer (figure 6: 20b) on a polysilicon layer (figure 6: 18b), and a step of depositing a silicon dioxide layer (figure 6: 35) on the tungsten silicide layer (page 2, paragraphs [0027]-[0030]) but fails to teach or suggest the Applicant's steps of

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depositing a silicon layer on the tungsten silicide layer wherein the silicon layer serves as a source for supplying silicon atoms to the silicon oxide film at the sidewall oxidizing step as recited in the independent claims 9, 16, 17, and 18. Furthermore, the reference Divakaruni et al. (U.S. Patent 6,346,734) discloses that an annealing step is needed after the mask open etch step to prevent anomalous  $WSi_x$  oxidation (col. 4, lines 35-65) but fails to teach or suggest the Applicant's step of providing a short-time annealing step carried out between the depositing and oxidizing steps as recited in independent claim 12.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khiem D Nguyen whose telephone number is (571) 272-1865. The examiner can normally be reached on Monday-Friday (8:00 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (571) 272-1855. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3432 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

K.N.  
July 14, 2004

A handwritten signature in black ink, appearing to be 'W. David Coleman', written over a horizontal line.

**W. DAVID COLEMAN  
PRIMARY EXAMINER**